



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, DC 20460

OFFICE OF CHEMICAL SAFETY  
AND POLLUTION PREVENTION

March 4, 2016

BASF Corporation  
Peko Rasic, Product Registration Manager  
26 Davis Drive  
PO Box 13528  
Research Triangle Park, NC 27709-3528

Subject: Label Amendment: Revised Master Label; Three Revised Supplemental Labels (pome fruit, multiple crops, fruiting vegetables). Plant back statement now harmonized on all labels  
Product Name: Vivando Fungicide  
EPA Registration Number: 7969-284  
Application Date: November 16, 2015  
Decision Number: 511339

Dear Mr. Rasic:

The amended Master and Supplemental labels referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide and Rodenticide Act, as amended, are acceptable. This approval does not affect any conditions that were previously imposed on this registration. You continue to be subject to existing conditions on your registration and any deadlines connected with them.

A stamped copy of your labeling is enclosed for your records. This labeling supersedes all previously accepted labeling. You must submit one copy of the final printed labeling before you release the product for shipment with the new labeling. In accordance with 40 CFR 152.130(c), you may distribute or sell this product under the previously approved labeling for 18 months from the date of this letter. After 18 months, you may only distribute or sell this product if it bears this new revised labeling or subsequently approved labeling. "To distribute or sell" is defined under FIFRA section 2(gg) and its implementing regulation at 40 CFR 152.3.

Should you wish to add/retain a reference to the company's website on your label, then please be aware that the website becomes labeling under the Federal Insecticide Fungicide and Rodenticide Act and is subject to review by the Agency. If the website is false or misleading, the product would be misbranded and unlawful to sell or distribute under FIFRA section 12(a)(1)(E). 40 CFR 156.10(a)(5) list examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the Agency find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA approved registration, the website will be referred to the EPA's Office of Enforcement and Compliance.

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Your release for shipment of the product constitutes acceptance of these conditions. If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA section 6.

If you have any questions, please contact Tony Kish by phone at 703 308-9443, or via email at [kish.tony@epa.gov](mailto:kish.tony@epa.gov); or Craig Reeves by phone at 703 347-0486, or via email at [reeves.craig@epa.gov](mailto:reeves.craig@epa.gov).

Sincerely,

A handwritten signature in black ink that reads "Tony Kish". The signature is written in a cursive, flowing style.

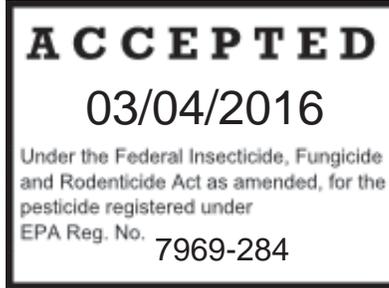
Tony Kish, Product Manager 22  
Fungicide Branch  
Registration Division (7505P)  
Office of Pesticide Programs

Enclosure: Stamped Master Label & 3 Stamped Supplemental Labels



We create chemistry

Group U8 Fungicide



# Vivando<sup>®</sup>

## Fungicide

**For use on apricot; cherry; cucurbit vegetables; fruit, small, vine climbing; fruiting vegetables; grapes; hops; peach; and pome fruit to control powdery mildew**

**Active Ingredient\*:**

metrafenone: (3-bromo-6-methoxy-2-methylphenyl)(2,3,4-trimethoxy-6-methylphenyl)methanone . . . . . 25.20%

**Other Ingredients:** . . . . . 74.80%

**Total:** . . . . . 100.00%

\* This product contains 2.5 lbs active ingredient per gallon

**EPA Reg. No. 7969-284**

**EPA Est. No.**

### KEEP OUT OF REACH OF CHILDREN CAUTION/PRECAUCION

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand this label, find someone to explain it to you in detail.)

See inside for complete **First Aid, Precautionary Statements, Directions For Use,** and **Conditions of Sale and Warranty.**

**In case of an emergency endangering life or property involving this product, call day or night 1-800-832-HELP (4357).**

### Net Contents:

<b>FIRST AID</b>	
<b>If in eyes</b>	<ul style="list-style-type: none"> <li>• Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes.</li> <li>• Remove contact lenses, if present, after first 5 minutes; then continue rinsing.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>If on skin</b>	<ul style="list-style-type: none"> <li>• Take off contaminated clothing.</li> <li>• Rinse skin immediately with plenty of water for 15 to 20 minutes.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>If swallowed</b>	<ul style="list-style-type: none"> <li>• Call a poison control center or doctor immediately for treatment advice.</li> <li>• Have person sip a glass of water if able to swallow.</li> <li>• <b>DO NOT</b> induce vomiting unless told to do so by a poison control center or doctor.</li> <li>• <b>DO NOT</b> give anything to an unconscious person.</li> </ul>
<b>If inhaled</b>	<ul style="list-style-type: none"> <li>• Move person to fresh air.</li> <li>• If person is not breathing, call 911 or an ambulance; then give artificial respiration, preferably by mouth to mouth, if possible.</li> <li>• Call a poison control center or doctor for further treatment advice.</li> </ul>
<b>HOTLINE NUMBER</b>	
<p>Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact BASF Corporation for emergency medical treatment information at 1-800-832-HELP (4357).</p>	

## Precautionary Statements

### Hazards to Humans and Domestic Animals

**Caution.** Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco.

### Personal Protective Equipment (PPE)

#### Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks

Follow the manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

### Engineering Controls Statement

When handlers use closed systems and enclosed cabs in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

## USER SAFETY RECOMMENDATIONS

#### Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

## Environmental Hazards

**DO NOT** apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. **DO NOT** contaminate water when disposing of equipment washwaters or rinsate. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. This pesticide is toxic to fish and aquatic invertebrates.

## Directions For Use

It is a violation of federal law to use this product in a manner inconsistent with its labeling.

**DO NOT** apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your state or tribe, consult the agency responsible for pesticide regulation.

## AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

**DO NOT** enter or allow worker entry into treated areas during the restricted-entry interval (REI) of **12 hours**. PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Socks and shoes
- Chemical-resistant gloves made of any waterproof material

## STORAGE AND DISPOSAL

**DO NOT** contaminate water, food, or feed by storage or disposal.

### Pesticide Storage

Store in original containers only. Keep container closed when not in use. **DO NOT** store near food or feed.

### Pesticide Disposal

Wastes resulting from the use of this product may be disposed of on-site or at an approved waste disposal facility. If these wastes cannot be disposed of according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

### Container Handling

**Nonrefillable Container. DO NOT** reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying; then offer for recycling, if available, or reconditioning, if appropriate, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

(continued)

## STORAGE AND DISPOSAL (continued)

### Container Handling (continued)

#### Triple rinse containers small enough to shake

**(capacity ≤ 5 gallons) as follows:** Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank, or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

#### Triple rinse containers too large to shake

**(capacity > 5 gallons) as follows:** Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank, or store rinsate for later use or disposal. Repeat this procedure two more times.

**Pressure rinse as follows:** Empty the remaining contents into application equipment or mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank, or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

## In Case of Emergency

In case of large-scale spillage regarding this product, call:

- CHEMTREC 1-800-424-9300
- BASF Corporation 1-800-832-HELP (4357)

In case of medical emergency regarding this product, call:

- Your local doctor for immediate treatment
- Your local poison control center (hospital)
- BASF Corporation: 1-800-832-HELP (4357)

### Steps to be taken in case this material is released or spilled:

- In case of spill on floor or paved surfaces, mop and remove to chemical waste storage area until proper disposal can be made if product cannot be used according to label.
- Dike and contain spill with inert material (sand, earth, etc.) and transfer liquid and solid diking material to separate containers for disposal.
- Remove contaminated clothing and wash affected skin areas with water.
- Wash clothing before reuse.
- Keep spill out of all sewers and open bodies of water.

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## Product Information

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**Vivando® fungicide** is formulated as a suspension concentrate (SC). **Vivando** provides control of powdery mildew for all crops listed on this label. To maximize disease control, apply **Vivando** in a regularly scheduled protective fungicide program and use in a rotation program with other fungicides.

### Mode of Action

Metrafenone, the active ingredient in **Vivando**, affects several stages in the infection process of the powdery mildew pathogen. It has a different mode of action than that of other fungicides registered for use against powdery mildew. Metrafenone affects normal development and growth processes of the powdery mildew pathogen. It inhibits spore germination, infection, and subsequent mycelial growth. It also reduces sporulation by preventing normal development of conidiophores and conidia.

### Resistance Management

**Vivando** contains metrafenone, a fungicide with a mode of action different from that of other fungicides currently registered for use against powdery mildew. **Vivando** is effective against pathogens resistant to other fungicides with a mode of action different than that of metrafenone. However, isolates of the powdery mildew pathogen may dominate the fungal population if metrafenone is used predominantly and repeatedly in the same vineyard or field in successive years as the primary method of control for the targeted powdery mildew pathogen species. This may result in reduction of disease control by **Vivando**.

### Resistance Management Advisory

The following recommendations may be considered to delay the development of fungicide resistance:

1. **Tank mixtures** - Use tank mixtures with fungicides from different target site of action groups that are registered/permited for the same use and that are effective against the pathogens of concern. BASF recommends that no less than the minimum labeled rates of each fungicide in the tank mix be used.
2. **Integrated Pest Management (IPM)** - Integrate **Vivando** into an overall disease and pest management program. Follow cultural practices known to reduce disease development. Consult your local extension specialist, certified crop advisor and/or BASF representative for additional IPM strategies established for your area. **Vivando** can be used in agricultural extension advisory (disease forecasting) programs that recommend application timing based on environmental factors favorable for disease development.
3. **Monitoring** - Monitor efficacy of all fungicides used in the disease management program against the targeted pathogen and record other factors that may influence fungicide performance and/or disease development. If **Vivando** appears to be less effective against a pathogen that it previously controlled or suppressed, contact a

BASF representative, local extension specialist, or certified crop advisor for further investigation.

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## Application Instructions

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**Vivando** can be applied with ground sprayer, hand-held sprayer or aerial equipment. **DO NOT** apply **Vivando** by chemigation.

Use **Vivando** in sufficient water to ensure thorough coverage of foliage and fruit. Refer to **Table 2. Vivando® fungicide Crop-specific Requirements** for specific application rates and application intervals.

### Aerial Application

**DO NOT** apply by air to hops. For all other crops listed on this label, aerial application can be made where applications are not possible using ground equipment. Thorough coverage is required to obtain optimum disease control. Avoid applications under conditions when uniform coverage cannot be obtained or when spray drift may occur. For aerial applications to cucurbits and fruiting vegetables, **DO NOT** use less than 5 gallons of spray solution per acre. For aerial applications to apricot; cherry; fruit, small, vine climbing; grapes; peach; and pome fruit, **DO NOT** use less than 10 gallons of spray solution per acre. Thorough coverage is required for optimum disease control. The reduced spray volumes used in aerial applications may result in physical incompatibility, reduced disease control, or crop injury from **Vivando** applications, particularly when tank mixed with other products. Therefore, before making aerial applications test the spray on a small portion of the crop to be treated to ensure that a phytotoxic response will not occur as a result of application.

### Spray Drift Management

**DO NOT** spray when conditions favor drift beyond area intended for application. Conditions that may contribute to drift include thermal inversion, wind speed and direction, spray nozzle/pressure combinations, spray droplet size, temperature/humidity, etc. Contact your state extension agent for spray drift prevention guidelines in your area. All aerial and ground application equipment must be properly maintained and calibrated using appropriate carriers. Avoiding spray drift at the application site is the responsibility of the applicator.

### Aerial Application Methods and Equipment

The interaction of many equipment-related and weather-related factors determines the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

**DO NOT** apply under circumstances where possible drift to unprotected persons, to food, forage, or other plantings that might be damaged, or crops thereof rendered unfit for sale, use or consumption can occur.

**DO NOT** release spray at a height greater than 10 feet above the crop canopy unless a greater height is required for aircraft safety or special weather conditions.

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications to agricultural field crops.

1. The distance of the outermost nozzles on the boom must not exceed 3/4 the length of the fixed wingspan or 90% of rotor blade diameter.
2. Nozzles must always point backward parallel with the air stream and never be pointed downward more than 45 degrees.

Where states have more stringent regulations, they must be observed.

### Information on Droplet Size

The most effective way to reduce drift potential is to apply large droplets. Use the largest droplet size consistent with acceptable efficacy. Applying larger droplets reduces drift potential but will not prevent drift if applications are made improperly or under unfavorable environmental conditions (see **Wind**; **Temperature and Humidity**; and **Temperature Inversions**).

#### Controlling droplet size:

- **Volume** - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure** - **DO NOT** exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **Number of Nozzles** - Use the minimum number of nozzles that provide uniform coverage.
- **Nozzle Orientation** - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is recommended practice unless inconsistent with product efficacy. Significant deflection from the horizontal will reduce droplet size and increase drift potential.
- **Nozzle Type** - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid-stream nozzles oriented straight back produce the largest droplets and the lowest drift.

### Wind

**DO NOT** apply at wind speeds greater than 15 mph. Drift potential is lowest when wind speed does not exceed 10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided when wind speed is below 2 mph due to variable wind direction and high inversion potential. Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

### Temperature and Humidity

Low humidity and high temperatures increase the evaporation of spray droplets and, therefore, the likelihood of increased spray drift. Avoid spraying during conditions of low humidity and/or high temperatures. When making

applications in low relative humidity, set up equipment to produce larger droplets in order to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

### Temperature Inversions

Applications should not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small, suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light, variable winds common during inversions.

Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

### Sensitive Areas

The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g. bodies of water or non-target crops) is minimal and when wind is blowing away from the sensitive areas.

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## Additives and General Tank Mixing Information

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**Vivando® fungicide** can be tank mixed with most recommended fungicides, insecticides, liquid fertilizers, biological control products, adjuvants, and additives as specified in **Table 2. Vivando® fungicide Crop-specific Requirements**. **DO NOT** mix **Vivando** with horticultural oils except for applications to grapes made **before flowering begins**. Refer to **Table 2. Vivando® fungicide Crop-specific Requirements** for more details.

Under some conditions, the use of additives or adjuvants may improve the performance of **Vivando**. However, all varieties and cultivars have not been tested with possible tank mix combinations. Local conditions can also influence crop tolerance and may not match those under which BASF has conducted testing. Physical incompatibility, reduced disease control, or crop injury may result from mixing **Vivando** with other products. Therefore, before using any tank mix, test the combination on a small portion of the crop to be treated to ensure that a phytotoxic response will not occur as a result of application.

Consult a BASF representative or local agricultural authorities for more information concerning additives.

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## Mixing Order

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1. **Water.** Begin by agitating a thoroughly clean sprayer tank 3/4 full of clean water.
2. **Agitation.** Maintain constant agitation throughout mixing and application.
3. **Inductor.** If an inductor is used, rinse it thoroughly after each component has been added.
4. **Products in PVA bags.** Place any product contained in water-soluble PVA bags into the mixing tank. Wait until water-soluble PVA bags have fully dissolved and the product is evenly mixed in the spray tank before continuing.
5. **Water-dispersible products** (dry flowables, wettable powders, suspension concentrates such as **Vivando® fungicide**, or suspo-emulsions).
6. **Water-soluble products.**
7. **Emulsifiable concentrates** (such as oil concentrates when applicable).
8. **Water-soluble additives** (such as ammonium sulfate [AMS] or urea ammonium nitrate [UAN] when applicable).
9. Remaining quantity of water.

Make sure that each component is thoroughly mixed and suspended before adding tank mix partners. Maintain constant agitation during application. See **Table 2. Vivando® fungicide Crop-specific Requirements** for more details.

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## Restrictions and Limitations

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- **DO NOT** exceed the maximum product rate (fl ozs/A) per year, the maximum rate per application, or the total number of applications of **Vivando** per year as stated in **Table 1. Vivando® fungicide Restrictions and Limitations Overview** and **Table 2. Vivando® fungicide Crop-specific Requirements**. Preharvest interval (PHI) restrictions are also included in these tables.
- **Restricted-entry Interval - DO NOT** enter or allow worker entry into treated areas during the restricted-entry interval (REI) of **12 hours**.
- **DO NOT** mix **Vivando** with horticultural oils when making applications to grapes **after flowering begins**.
- **DO NOT** apply **Vivando** by chemigation.
- **Plantback Restrictions** - Crops with registered uses of metrafenone can be replanted at any time. All other crops grown for food or feed must not be planted before 365 days.
- Follow the most restrictive of the labeling limitations and precautions of all products used in mixtures.

**Table 1. Vivando® fungicide Restrictions and Limitations Overview\***

<b>Crop/Crop Group**</b>	<b>Minimum Time from Application to Harvest (PHI) (days)</b>	<b>Maximum Product Rate per Application (fl ozs/A)</b>	<b>Maximum Number of Applications per Year</b>	<b>Maximum Product Rate per Year (fl ozs/A)</b>
<b>Apricot</b>	7	15.4 (0.3 lb ai)	2	30.8 (0.6 lb ai)
<b>Cherry subgroup 12-12A</b>	7	15.4 (0.3 lb ai)	2	30.8 (0.6 lb ai)
<b>Cucurbit vegetables, group 9</b>	0	15.4 (0.3 lb ai)	3	46.2 (0.9 lb ai)
<b>Fruit, small, vine climbing (except fuzzy kiwifruit and grapes) subgroup 13-07F</b>	14	15.4 (0.3 lb ai)	3	46.2 (0.9 lb ai)
<b>Fruiting vegetables group</b>	0	15.4 (0.3 lb ai)	3	46.2 (0.9 lb ai)
<b>Grapes</b>	14	15.4 (0.3 lb ai)	3	46.2 (0.9 lb ai)
<b>Hops</b>	3	15.4 (0.3 lb ai)	2	30.8 (0.6 lb ai)
<b>Peach subgroup 12-12B</b>	7	15.4 (0.3 lb ai)	2	30.8 (0.6 lb ai)
<b>Pome fruit group</b>	7	15.4 (0.3 lb ai)	3	46.2 (0.9 lb ai)

\* See **Table 2. Vivando® fungicide Crop-specific Requirements** for complete directions and exceptions.

\*\* For a complete list of crops within a crop group, see **Table 2. Vivando® fungicide Crop-specific Requirements**.

**Table 2. Vivando® fungicide Crop-specific Requirements**

Crop	Target Disease	Product Use Rate per Application (fl ozs/A)	Maximum Number of Applications per Year	Maximum Product Rate per Year (fl ozs/A)	Minimum Time from Application to Harvest (PHI) (days)
<b>Apricot</b>	Powdery mildew <i>Podosphaera</i> spp., <i>Sphaerotheca</i> spp.	10.3 to 15.4 (0.2 to 0.3 lb ai)	2	30.8 (0.6 lb ai)	7

**Application Directions.** For control of powdery mildew, begin **Vivando** applications at pink bud or white bud or prior to disease development using 10.3 to 15.4 fl ozs/A (0.2 to 0.3 lb ai) and continue on a 7 to 14 day interval.

Use the higher rate and the shorter interval when disease pressure is high.

**Vivando** must be applied before visual symptoms of powdery mildew appear. **Vivando** has no curative properties and will not control latent or established infections of powdery mildew. If powdery mildew infection is established, **Vivando** should be applied in a tank mix combination or following application of a curative fungicide.

**DO NOT** apply at rates higher than 15.4 fl ozs product (0.3 lb ai). **DO NOT** apply more than 30.8 fl ozs/A (0.6 lb ai) per year. The minimum interval between sprays is 7 days.

**DO NOT** mix **Vivando** with horticultural oils when making applications to apricots.

**Resistance Management.** To limit the potential for development of resistance, **DO NOT** make more than two (2) **Vivando** applications per year.

**DO NOT** make more than two (2) sequential **Vivando** applications before alternating to a labeled fungicide with a different mode of action.

(continued)

**Table 2. Vivando® fungicide Crop-specific Requirements** (continued)

Crop	Target Disease	Product Use Rate per Application (fl ozs/A)	Maximum Number of Applications per Year	Maximum Product Rate per Year (fl ozs/A)	Minimum Time from Application to Harvest (PHI) (days)
<b>Cherry subgroup 12-12A</b> Capulin Cherry, black Cherry, Nanking Cherry, sweet Cherry, tart Cultivars, varieties, and/or hybrids of these	Powdery mildew <i>Podosphaera</i> spp., <i>Sphaerotheca</i> spp.	10.3 to 15.4 (0.2 to 0.3 lb ai)	2	30.8 (0.6 lb ai)	7

**Application Directions.** For control of powdery mildew, begin **Vivando** applications at pink bud or white bud or prior to disease development using 10.3 to 15.4 fl ozs/A (0.2 to 0.3 lb ai) and continue on a 7 to 14 day interval.

Use the higher rate and the shorter interval when disease pressure is high.

**Vivando** must be applied before visual symptoms of powdery mildew appear. **Vivando** has no curative properties and will not control latent or established infections of powdery mildew. If powdery mildew infection is established, **Vivando** should be applied in a tank mix combination or following application of a curative fungicide.

**DO NOT** apply at rates higher than 15.4 fl ozs product (0.3 lb ai). **DO NOT** apply more than 30.8 fl ozs/A (0.6 lb ai) per year. The minimum interval between sprays is 7 days.

**DO NOT** mix **Vivando** with horticultural oils when making applications to cherries.

**Resistance Management.** To limit the potential for development of resistance, **DO NOT** make more than two (2) **Vivando** applications per year.

**DO NOT** make more than two (2) sequential **Vivando** applications before alternating to a labeled fungicide with a different mode of action.

(continued)

**Table 2. Vivando® fungicide Crop-specific Requirements** (continued)

Crop	Target Disease	Product Use Rate per Application (fl ozs/A)	Maximum Number of Applications per Year	Maximum Product Rate per Year (fl ozs/A)	Minimum Time from Application to Harvest (PHI) (days)
<p><b>Cucurbit vegetables, group 9</b>                      Chayote                      Chinese waxgourd                      Citron melon                      Cucumber                      Gherkin                      Pumpkin                      Watermelon</p> <p><b>Edible gourd</b>                      Hechima                      Hyotan                      Cucuzza                      Chinese okra</p> <p><b>Momordica spp.</b>                      Balsam apple                      Balsam pear                      Bitter melon                      Chinese cucumber</p> <p><b>Muskmelon</b>                      Cantaloupe                      Casaba                      Crenshaw melon                      Golden pershaw melon                      Honeydew melon                      Honey balls                      Mango melon                      Persian melon                      Pineapple melon                      Santaclaus melon                      Snake melon</p> <p><b>Summer squash</b>                      Crookneck squash                      Scallop squash                      Straightneck squash                      Vegetable marrow                      Zucchini</p> <p><b>Winter squash</b>                      Butternut squash                      Calabaza                      Hubbard squash                      Acorn squash                      Spaghetti squash</p>	<p>Powdery mildew  <i>Sphaerotheca</i> spp.,  <i>Erysiphe</i> spp.</p>	<p>10.3 to 15.4                      (0.2 to 0.3 lb ai)</p>	<p>3</p>	<p>46.2                      (0.9 lb ai)</p>	<p>0</p>

(continued)

**Table 2. Vivando® fungicide Crop-specific Requirements** *(continued)*

**Cucurbit vegetables, group 9** *(continued)*

**Application Directions.** For control of powdery mildew, begin **Vivando** applications prior to disease development using 10.3 to 15.4 fl ozs/A (0.2 to 0.3 lb ai) and continue on a 7 to 14 day interval.

Use the higher rate and the shorter interval when disease pressure is high.

**Vivando** must be applied before visual symptoms of powdery mildew appear. **Vivando** has no curative properties and will not control latent or established infections of powdery mildew. If powdery mildew infection is established, **Vivando** should be applied in a tank mix combination or following application of a curative fungicide.

**DO NOT** apply at rates higher than 15.4 fl ozs product (0.3 lb ai). **DO NOT** apply more than 46.2 fl ozs/A (0.9 lb ai) per year. The minimum interval between sprays is 7 days.

**DO NOT** mix **Vivando** with horticultural oils when making applications to crops in the cucurbit vegetables group.

**Resistance Management.** To limit the potential for development of resistance, **DO NOT** make more than three (3) **Vivando** applications per year.

**DO NOT** make more than two (2) sequential **Vivando** applications before alternating to a labeled fungicide with a different mode of action.

*(continued)*

**Table 2. Vivando® fungicide Crop-specific Requirements** (continued)

Crop	Target Disease	Product Use Rate per Application (fl ozs/A)	Maximum Number of Applications per Year	Maximum Product Rate per Year (fl ozs/A)	Minimum Time from Application to Harvest (PHI) (days)
<p><b>Fruit, small, vine climbing (except fuzzy kiwifruit and grapes) subgroup 13-07F</b></p> <p>Amur river grape Gooseberry Kiwifruit, hardy Maypop Schisandra berry Cultivars, varieties, and/or hybrids of these</p>	<p>Powdery mildew <i>Podosphaera</i> spp.</p>	<p>10.3 to 15.4 (0.2 to 0.3 lb ai)</p>	<p>3</p>	<p>46.2 (0.9 lb ai)</p>	<p>14</p>
<p><b>Application Directions.</b> For control of powdery mildew, begin <b>Vivando</b> applications at bud break prior to disease development using 10.3 to 15.4 fl ozs/A (0.2 to 0.3 lb ai) and continue on a 14 to 21 day interval.</p> <p>Use the higher rate and the shorter interval when disease pressure is high.</p> <p><b>Vivando</b> must be applied before visual symptoms of powdery mildew appear. <b>Vivando</b> has no curative properties and will not control latent or established infections of powdery mildew. If powdery mildew infection is established, <b>Vivando</b> should be applied in a tank mix combination or following application of a curative fungicide.</p> <p><b>DO NOT</b> apply at rates higher than 15.4 fl ozs product (0.3 lb ai). <b>DO NOT</b> apply more than 46.2 fl ozs/A (0.9 lb ai) per year. The minimum interval between sprays is 14 days.</p> <p><b>DO NOT</b> mix <b>Vivando</b> with horticultural oils when making applications to crops in the fruit, small, vine climbing (except fuzzy kiwifruit and grapes) subgroup.</p> <p><b>Resistance Management.</b> To limit the potential for development of resistance, <b>DO NOT</b> make more than three (3) <b>Vivando</b> applications per year.</p> <p><b>DO NOT</b> make more than two (2) sequential <b>Vivando</b> applications before alternating to a labeled fungicide with a different mode of action.</p>					

(continued)

**Table 2. Vivando® fungicide Crop-specific Requirements** (continued)

Crop	Target Disease	Product Use Rate per Application (fl ozs/A)	Maximum Number of Applications per Year	Maximum Product Rate per Year (fl ozs/A)	Minimum Time from Application to Harvest (PHI) (days)
<b>Fruiting vegetables group</b> African eggplant Bush tomato Bell pepper Cocona Currant tomato Eggplant Garden huckleberry Goji berry Groundcherry Martynia Naranjilla Okra Pea eggplant Pepino Non-bell pepper Roselle Scarlet eggplant Sunberry Tomatillo Tomato Tree tomato Cultivars, varieties, and/or hybrids of these	Powdery mildew <i>Leveillula</i> spp., <i>Oidium</i> spp., <i>Erysiphe</i> spp.	10.3 to 15.4 (0.2 to 0.3 lb ai)	3	46.2 (0.9 lb ai)	0

**Application Directions.** For control of powdery mildew, begin **Vivando** applications prior to disease development, using 10.3 to 15.4 fl ozs/A (0.2 to 0.3 lb ai) and continue on a 7 to 14 day interval.

Use the higher rate and shorter interval when disease pressure is high.

**Vivando** must be applied before visual symptoms of powdery mildew appear. **Vivando** has no curative properties and will not control latent or established infections of powdery mildew. If powdery mildew infection is established, **Vivando** should be applied in a tank mix combination or following application of a curative fungicide.

**DO NOT** apply at rates higher than 15.4 fl ozs product (0.3 lb ai). **DO NOT** apply more than 46.2 fl ozs/A (0.9 lb ai) per year. The minimum interval between sprays is 7 days.

**DO NOT** mix **Vivando** with horticultural oils when making applications to crops in the fruiting vegetables group.

**Resistance Management.** To limit the potential for development of resistance, **DO NOT** make more than three (3) **Vivando** applications per year.

**DO NOT** make more than two (2) sequential **Vivando** applications before alternating to a labeled fungicide with a different mode of action.

(continued)

**Table 2. Vivando® fungicide Crop-specific Requirements** (continued)

Crop	Target Disease	Product Use Rate per Application (fl ozs/A)	Maximum Number of Applications per Year	Maximum Product Rate per Year (fl ozs/A)	Minimum Time from Application to Harvest (PHI) (days)
<b>Grapes</b>	Powdery mildew <i>Podosphaera</i> spp.	10.3 to 15.4 (0.2 to 0.3 lb ai)	3	46.2 (0.9 lb ai)	14

**Application Directions.** For control of powdery mildew, begin **Vivando** applications at bud break prior to onset of disease, using 10.3 to 15.4 fl ozs/A (0.2 to 0.3 lb ai) and continue on a 14 to 21 day interval.

Use the higher rate and the shorter interval when disease pressure is high.

**Vivando** must be applied before visual symptoms of powdery mildew appear. **Vivando** has no curative properties and will not control latent or established infections of powdery mildew. If powdery mildew infection is established, **Vivando** should be applied in a tank mix combination or following application of a curative fungicide.

**DO NOT** apply at rates higher than 15.4 fl ozs product (0.3 lb ai). **DO NOT** apply more than 46.2 fl ozs/A (0.9 lb ai) per year. The minimum interval between sprays is 14 days.

**DO NOT** mix **Vivando** with horticultural oils when making applications to grapes **after flowering begins**.

**Resistance Management.** To limit the potential for development of resistance, **DO NOT** make more than three (3) **Vivando** applications per year.

**DO NOT** make more than two (2) sequential **Vivando** applications before alternating to a labeled fungicide with a different mode of action.

Crop	Target Disease	Product Use Rate per Application (fl ozs/A)	Maximum Number of Applications per Year	Maximum Product Rate per Year (fl ozs/A)	Minimum Time from Application to Harvest (PHI) (days)
<b>Hops</b>	Powdery mildew <i>Podosphaera</i> spp., <i>Sphaerotheca</i> spp.	10.3 to 15.4 (0.2 to 0.3 lb ai)	2	30.8 (0.6 lb ai)	3

**Application Directions.** For control of powdery mildew, begin **Vivando** applications prior to disease development using 10.3 to 15.4 fl ozs/A (0.2 to 0.3 lb ai) and continue on a 7 to 14 day interval.

Use the higher rate and shorter interval when disease pressure is high.

**DO NOT** apply by air.

**Vivando** must be applied before visual symptoms of powdery mildew appear. **Vivando** has no curative properties and will not control latent or established infections of powdery mildew. If powdery mildew infection is established, **Vivando** should be applied in a tank mix combination or following application of a curative fungicide.

**DO NOT** apply at rates higher than 15.4 fl ozs product (0.3 lb ai). **DO NOT** apply more than 30.8 fl ozs/A (0.6 lb ai) per year. The minimum interval between sprays is 7 days.

**DO NOT** mix **Vivando** with horticultural oils when making applications to hops.

**Resistance Management.** To limit the potential for development of resistance, **DO NOT** make more than two (2) **Vivando** applications per year.

**DO NOT** make more than two (2) sequential **Vivando** applications before alternating to a labeled fungicide with a different mode of action.

(continued)

**Table 2. Vivando® fungicide Crop-specific Requirements** (continued)

Crop	Target Disease	Product Use Rate per Application (fl ozs/A)	Maximum Number of Applications per Year	Maximum Product Rate per Year (fl ozs/A)	Minimum Time from Application to Harvest (PHI) (days)
<b>Peach subgroup 12-12B</b> Nectarine Peach Cultivars, varieties, and/or hybrids of these	Powdery mildew <i>Podosphaera</i> spp., <i>Sphaerotheca</i> spp.	10.3 to 15.4 (0.2 to 0.3 lb ai)	2	30.8 (0.6 lb ai)	7

**Application Directions.** For control of powdery mildew, begin **Vivando** applications at pink bud or white bud or prior to disease development using 10.3 to 15.4 fl ozs/A (0.2 to 0.3 lb ai) and continue on a 7 to 14 day interval.

Use the higher rate and shorter interval when disease pressure is high.

**Vivando** must be applied before visual symptoms of powdery mildew appear. **Vivando** has no curative properties and will not control latent or established infections of powdery mildew. If powdery mildew infection is established, **Vivando** should be applied in a tank mix combination or following application of a curative fungicide.

**DO NOT** apply at rates higher than 15.4 fl ozs product (0.3 lb ai). **DO NOT** apply more than 30.8 fl ozs/A (0.6 lb ai) per year. The minimum interval between sprays is 7 days.

**DO NOT** mix **Vivando** with horticultural oils when making applications to crops in the peach subgroup.

**Resistance Management.** To limit the potential for development of resistance, **DO NOT** make more than two (2) **Vivando** applications per year.

**DO NOT** make more than two (2) sequential **Vivando** applications before alternating to a labeled fungicide with a different mode of action.

(continued)

**Table 2. Vivando® fungicide Crop-specific Requirements** (continued)

Crop	Target Disease	Product Use Rate per Application (fl ozs/A)	Maximum Number of Applications per Year	Maximum Product Rate per Year (fl ozs/A)	Minimum Time from Application to Harvest (PHI) (days)
<b>Pome fruit group</b> Apple Asian pear Azarole Crabapple Loquat Mayhaw Medlar Pear Quince Quince, Chinese Quince, Japanese Tejocote	Powdery mildew <i>Podosphaera</i> spp.	10.3 to 15.4 (0.2 to 0.3 lb ai)	3	46.2 (0.9 lb ai)	7

**Application Directions.** For control of powdery mildew, begin **Vivando** applications at bud break targeting rapidly expanding tissues, using 10.3 to 15.4 fl ozs/A (0.2 to 0.3 lb ai) and continue on a 7 to 14 day interval.

Use the higher rate and shorter interval when disease pressure is high.

**Vivando** must be applied before visual symptoms of powdery mildew appear. **Vivando** has no curative properties and will not control latent or established infections of powdery mildew. If powdery mildew infection is established, **Vivando** should be applied in a tank mix combination or following application of a curative fungicide.

**DO NOT** apply at rates higher than 15.4 fl ozs product (0.3 lb ai). **DO NOT** apply more than 46.2 fl ozs/A (0.9 lb ai) per year. The minimum interval between sprays is 7 days.

**DO NOT** mix **Vivando** with horticultural oils when making applications to crops in the pome fruit group.

**Resistance Management.** To limit the potential for development of resistance, **DO NOT** make more than three (3) **Vivando** applications per year.

**DO NOT** make more than two (2) sequential **Vivando** applications before alternating to a labeled fungicide with a different mode of action.

## Conditions of Sale and Warranty

The **Directions For Use** of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and must be followed carefully. However, it is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or use of the product in a manner inconsistent with its labeling, all of which are beyond the control of BASF CORPORATION ("BASF") or the Seller. To the extent consistent with applicable law, all such risks shall be assumed by the Buyer.

BASF warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the **Directions For Use**, subject to the inherent risks, referred to above.

**TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BASF MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS OR MERCHANTABILITY OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.**

**TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BUYER'S EXCLUSIVE REMEDY AND BASF'S EXCLUSIVE LIABILITY, WHETHER IN CONTRACT, TORT, NEGLIGENCE, STRICT LIABILITY, OR OTHERWISE, SHALL BE LIMITED TO REPAYMENT OF THE PURCHASE PRICE OF THE PRODUCT.**

**TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BASF AND THE SELLER DISCLAIM ANY LIABILITY FOR CONSEQUENTIAL, EXEMPLARY, SPECIAL OR INDIRECT DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT.**

BASF and the Seller offer this product, and the Buyer and User accept it, subject to the foregoing **Conditions of Sale and Warranty** which may be varied only by agreement in writing signed by a duly authorized representative of BASF.

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007969-00284.20151112d.**NVA 2015-04-331-0172**  
Supersedes: NVA 2014-04-331-0010

BASF Corporation  
26 Davis Drive  
Research Triangle Park, NC 27709



We create chemistry

## Supplemental Label

# Vivando®

## Fungicide

**ACCEPTED**

03/04/2016

Under the Federal Insecticide, Fungicide and Rodenticide Act as amended, for the pesticide registered under EPA Reg. No. 7969-284

### For use on fruiting vegetables to control powdery mildew

This supplemental label expires December 31, 2017 and must not be used or distributed after this date.

#### Active Ingredient\*:

metrafenone: (3-bromo-6-methoxy-2-methylphenyl)(2,3,4-trimethoxy-6-methylphenyl)methanone ..... 25.20%

**Other Ingredients:**..... 74.80%

**Total:** ..... 100.00%

\*This product contains 2.5 lbs active ingredient per gallon

**EPA Reg. No. 7969-284**

### Directions For Use

- It is a violation of federal law to use this product in a manner inconsistent with its labeling.
- The supplemental labeling and the entire **Vivando® fungicide** container label, EPA Reg. No. 7969-284, must be in possession of the user at the time of application.
- Read the label affixed to the container for **Vivando** before applying.
- Use of **Vivando** according to this labeling is subject to the use precautions and limitations imposed by the label affixed to the container for **Vivando**.

### Product Information

#### Mode of Action

Metrafenone, the active ingredient in **Vivando**, affects several stages in the infection process of the powdery mildew pathogen. It has a different mode of action than that of other fungicides registered for use against fruiting vegetables powdery mildew.

#### Resistance Management

**Vivando** contains metrafenone, a fungicide with a mode of action different from that of other fungicides

currently registered for use against fruiting vegetables powdery mildew. Refer to the **Vivando** container label for additional fungicide resistance recommendations.

### Application Instructions

Refer to the **Vivando® fungicide Crop-specific Requirements** table on this label for specific application rates and application intervals for fruiting vegetables. **Vivando** can be applied with ground sprayer, hand-held sprayer or aerial equipment. **DO NOT** apply **Vivando** by chemigation. Refer to the **Vivando** container label for additional instructions and restrictions.

#### Aerial Application

Aerial application can be made to fruiting vegetables where applications are not possible using ground equipment. Thorough coverage is required to obtain optimum disease control. Avoid applications under conditions when uniform coverage cannot be obtained or when spray drift may occur. For aerial applications to fruiting vegetables, **DO NOT** use less than 5 gallons of spray solution per acre. Thorough coverage is required for optimum disease control. The reduced spray volumes used in aerial applications may result in physical incompatibility, reduced disease control, or crop injury from **Vivando** applications, particularly

when tank mixed with other products. Therefore, before making aerial applications test the spray on a small portion of the crop to be treated to ensure that a phytotoxic response will not occur as a result of application.

## Spray Drift Management

**DO NOT** spray when conditions favor drift beyond area intended for application. Conditions that may contribute to drift include thermal inversion, wind speed and direction, spray nozzle/pressure combinations, spray droplet size, temperature/humidity, etc. Contact your state extension agent for spray drift prevention guidelines in your area. All aerial and ground application equipment must be properly maintained and calibrated using appropriate carriers. Avoiding spray drift at the application site is the responsibility of the applicator.

## Aerial Application Methods and Equipment

The interaction of many equipment-related and weather-related factors determines the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

**DO NOT** apply under circumstances where possible drift to unprotected persons, to food, forage, or other plantings that might be damaged, or crops thereof rendered unfit for sale, use or consumption can occur.

**DO NOT** release spray at a height greater than 10 feet above the crop canopy unless a greater height is required for aircraft safety or special weather conditions.

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications to agricultural field crops.

1. The distance of the outermost nozzles on the boom must not exceed 3/4 the length of the fixed wingspan or 90% of rotor blade diameter.
2. Nozzles must always point backward parallel with the airstream and never be pointed downward more than 45 degrees.

Where states have more stringent regulations, they must be observed.

## Information on Droplet Size

The most effective way to reduce drift potential is to apply large droplets. Use the largest droplet size consistent with acceptable efficacy. Applying larger droplets reduces drift potential but will not prevent drift if applications are made improperly or under unfavorable environmental conditions (see Wind; Temperature and Humidity; and Temperature Inversions).

## Controlling droplet size:

- **Volume** - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure** - **DO NOT** exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **Number of Nozzles** - Use the minimum number of nozzles that provide uniform coverage.
- **Nozzle Orientation** - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is recommended practice unless inconsistent with product efficacy. Significant deflection from the horizontal will reduce droplet size and increase drift potential.
- **Nozzle Type** - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid-stream nozzles oriented straight back produce the largest droplets and the lowest drift.

## Wind

**DO NOT** apply at wind speeds greater than 15 mph. Drift potential is lowest when wind speed does not exceed 10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided when wind speed is below 2 mph due to variable wind direction and high inversion potential. Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

## Temperature and Humidity

Low humidity and high temperatures increase the evaporation of spray droplets and, therefore, the likelihood of increased spray drift. Avoid spraying during conditions of low humidity and/or high temperatures. When making applications in low relative humidity, set up equipment to produce larger droplets in order to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

## Temperature Inversions

Applications should not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small, suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light, variable winds common during inversions.

Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

### Sensitive Areas

The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g. bodies of water or non-target crops) is minimal and when wind is blowing away from the sensitive areas.

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### Additives and General Tank Mixing Information

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**Vivando® fungicide** can be tank mixed with most recommended fungicides, insecticides, liquid fertilizers, biological control products, adjuvants, and additives as specified in the **Vivando® fungicide Crop-specific Requirements** table on this label for fruiting vegetables.

Under some conditions, the use of additives or adjuvants may improve the performance of **Vivando**. However, all varieties and cultivars have not been tested with all possible tank mix combinations. Local conditions can also influence crop tolerance and may not match those under which BASF has conducted testing. Physical incompatibility, reduced disease control, or crop injury may result from mixing **Vivando** with other products. Therefore, before using any tank mix, test the combination on a small portion of the crop to be treated to ensure that a phytotoxic response will not occur as a result of application.

Consult a BASF representative or local agricultural authorities for more information concerning additives.

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### Mixing Order

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Make sure that each component is thoroughly mixed and suspended before adding tank mix partners. Maintain constant agitation during application. Refer to the **Vivando® fungicide Crop-specific Requirements** table on this label for additional details on fruiting vegetables. Refer to the **Vivando** container label for additional mixing instructions.

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### Restrictions and Limitations

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- **DO NOT** exceed the maximum product rate (fl ozs/A) per year, the maximum rate per application, or the total number of applications of **Vivando** per year as stated in the **Vivando® fungicide Crop-specific Requirements** table on this label. Preharvest interval (PHI) restrictions are also included in these tables.
- **Restricted-entry Interval - DO NOT** enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 12 hours.
- **DO NOT** apply by chemigation.
- **Plantback Restrictions** – Crops with registered uses of metrafenone can be replanted at any time. All other crops grown for food or feed must not be planted before 365 days.
- Follow the most restrictive of the labeling limitations and precautions of all products used in mixtures.

## Vivando® fungicide Crop-specific Requirements

Crop	Target Disease	Product Use Rate per Application (fl ozs/A)	Maximum Number of Applications per Year	Maximum Product Rate per Year (fl ozs/A)	Minimum Time from Application to Harvest (PHI) (days)
<b>Fruiting vegetables group</b> African eggplant Bush tomato Bell pepper Cocona Currant tomato Eggplant Garden huckleberry Goji berry Groundcherry Martynia Naranjilla Okra Pea eggplant Pepino Non-bell pepper Roselle Scarlet eggplant Sunberry Tomatillo Tomato Tree tomato Cultivars, varieties, and/or hybrids of these	Powdery mildew <i>Leveillula</i> spp., <i>Oidium</i> spp., <i>Erysiphe</i> spp.	10.3 to 15.4 (0.2 to 0.3 lb ai)	3	46.2 (0.9 lb ai)	0

**Application Directions.** For control of powdery mildew, begin **Vivando** applications prior to disease development using 10.3 to 15.4 fl ozs/A (0.2 to 0.3 lb ai) and continue on a 7 to 14 day interval.

Use the higher rate and shorter interval when disease pressure is high.

**Vivando** must be applied before visual symptoms of powdery mildew appear. **Vivando** has no curative properties and will not control latent or established infections of powdery mildew. If powdery mildew infection is established, **Vivando** should be applied in a tank mix combination or following application of a curative fungicide.

**DO NOT** apply at rates higher than 15.4 fl ozs product (0.3 lb ai). **DO NOT** apply more than 46.2 fl ozs/A (0.9 lb ai) per year. The minimum interval between sprays is 7 days.

**DO NOT** mix **Vivando** with horticultural oils when making applications to crops in the fruiting vegetables group.

**Resistance Management.** To limit the potential for development of resistance, **DO NOT** make more than three (3) applications of **Vivando** per year.

**DO NOT** make more than two (2) sequential **Vivando** applications before alternating to a labeled fungicide with a different mode of action.

## Conditions of Sale and Warranty

The **Directions For Use** of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and must be followed carefully. However, it is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or use of the product in a manner inconsistent with its labeling, all of which are beyond the control of BASF CORPORATION ("BASF") or the Seller. To the extent consistent with applicable law, all such risks shall be assumed by the Buyer.

BASF warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the **Directions For Use**, subject to the inherent risks, referred to above.

**TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BASF MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS OR MERCHANTABILITY OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.**

**TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BUYER'S EXCLUSIVE REMEDY AND BASF'S EXCLUSIVE LIABILITY, WHETHER IN CONTRACT, TORT, NEGLIGENCE, STRICT LIABILITY, OR OTHERWISE, SHALL BE LIMITED TO REPAYMENT OF THE PURCHASE PRICE OF THE PRODUCT.**

**TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BASF AND THE SELLER DISCLAIM ANY LIABILITY FOR CONSEQUENTIAL, EXEMPLARY, SPECIAL OR INDIRECT DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT.**

BASF and the Seller offer this product, and the Buyer and User accept it, subject to the foregoing **Conditions of Sale and Warranty** which may be varied only by agreement in writing signed by a duly authorized representative of BASF.

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007969-00284.20160217c.NVA 2016-04-331-0045

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Research Triangle Park, NC 27709



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**ACCEPTED**

03/04/2016

Under the Federal Insecticide, Fungicide and Rodenticide Act as amended, for the pesticide registered under EPA Reg. No. 7969-284

Group **U8** Fungicide

## Supplemental Label

# Vivando®

## Fungicide

**For use on apricot; cherry subgroup 12-12A; cucurbit vegetables, group 9; fruit, small, vine climbing (except fuzzy kiwifruit and grapes) subgroup 13-07F; grapes; hops; and peach subgroup 12-12B to control powdery mildew**

This supplemental label expires December 31, 2017 and must not be used or distributed after this date.

### Active Ingredient\*:

metrafenone: (3-bromo-6-methoxy-2-methylphenyl)(2,3,4-trimethoxy-6-methylphenyl)methanone ..... 25.20%

**Other Ingredients:**..... 74.80%

**Total:** ..... 100.00%

\*This product contains 2.5 lbs active ingredient per gallon.

**EPA Reg. No. 7969-284**

### Directions For Use

- It is a violation of federal law to use this product in a manner inconsistent with its labeling.
- The supplemental labeling and the entire **Vivando® fungicide** container label, EPA Reg. No. 7969-284, must be in possession of the user at the time of application.
- Read the label affixed to the container for **Vivando** before applying.
- Use of **Vivando** according to this labeling is subject to the use precautions and limitations imposed by the label affixed to the container for **Vivando**.

### Product Information

#### Mode of Action

Metrafenone, the active ingredient in **Vivando**, affects several stages in the infection process of the powdery mildew pathogen. It has a different mode of action than that of other fungicides registered for use against peach subgroup 12-12B; apricot; cherry subgroup 12-12A; hops; cucurbit vegetables, group 9; and fruit, small, vine climbing (except fuzzy kiwifruit) subgroup 13-07F powdery mildew.

### Resistance Management

**Vivando** contains metrafenone, a fungicide with a mode of action different from that of other fungicides currently registered for use against powdery mildew. Refer to the **Vivando** container label for additional fungicide resistance recommendations.

### Application Instructions

Refer to the **Vivando® fungicide Crop-specific Requirements** table on this label for specific application rates and application intervals for crops listed on this label. **Vivando** can be applied with ground sprayer, hand-held sprayer or aerial equipment. **DO NOT** apply **Vivando** by chemigation. Refer to the **Vivando** container label for additional instructions and restrictions.

#### Aerial Application

**DO NOT** apply by air to hops. For all other crops listed on this label, aerial application can be made where applications are not possible using ground application. Thorough coverage is required to obtain optimum disease control. Avoid applications under conditions when uniform coverage cannot be obtained or when

spray drift may occur. For aerial applications to cucurbit vegetables, group 9, **DO NOT** use less than 5 gallons of spray solution per acre. For aerial applications to apricot; cherry subgroup 12-12A; fruit, small, vine climbing (except fuzzy kiwifruit) subgroup 13-07F; and peach subgroup 12-12B, **DO NOT** use less than 10 gallons of spray solution per acre. Thorough coverage is required for optimum disease control. The reduced spray volumes used in aerial applications may result in physical incompatibility, reduced disease control, or crop injury from **Vivando® fungicide** applications, particularly when tank mixed with other products. Therefore, before making aerial applications test the spray on a small portion of the crop to be treated to ensure that a phytotoxic response will not occur as a result of application.

## Spray Drift Management

**DO NOT** spray when conditions favor drift beyond area intended for application. Conditions that may contribute to drift include thermal inversion, wind speed and direction, spray nozzle/pressure combinations, spray droplet size, temperature/humidity, etc. Contact your state extension agent for spray drift prevention guidelines in your area. All aerial and ground application equipment must be properly maintained and calibrated using appropriate carriers. Avoiding spray drift at the application site is the responsibility of the applicator.

## Aerial Application Methods and Equipment

The interaction of many equipment-related and weather-related factors determines the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

**DO NOT** apply under circumstances where possible drift to unprotected persons, to food, forage, or other plantings that might be damaged, or crops thereof rendered unfit for sale, use or consumption can occur.

**DO NOT** release spray at a height greater than 10 feet above the crop canopy unless a greater height is required for aircraft safety or special weather conditions.

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications to agricultural field crops.

1. The distance of the outermost nozzles on the boom must not exceed 3/4 the length of the fixed wingspan or 90% of rotor blade diameter.
2. Nozzles must always point backward parallel with the airstream and never be pointed downward more than 45 degrees.

Where states have more stringent regulations, they must be observed.

## Information on Droplet Size

The most effective way to reduce drift potential is to apply large droplets. Use the largest droplet size consistent with acceptable efficacy. Applying larger droplets reduces drift potential but will not prevent drift if applications are made improperly or under unfavorable environmental conditions (see Wind; Temperature and Humidity; and Temperature Inversions).

### Controlling droplet size:

- **Volume** - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure** - **DO NOT** exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **Number of Nozzles** - Use the minimum number of nozzles that provide uniform coverage.
- **Nozzle Orientation** - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is recommended practice unless inconsistent with product efficacy. Significant deflection from the horizontal will reduce droplet size and increase drift potential.
- **Nozzle Type** - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid-stream nozzles oriented straight back produce the largest droplets and the lowest drift.

## Wind

**DO NOT** apply at wind speeds greater than 15 mph. Drift potential is lowest when wind speed does not exceed 10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided when wind speed is below 2 mph due to variable wind direction and high inversion potential. Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

## Temperature and Humidity

Low humidity and high temperatures increase the evaporation of spray droplets and, therefore, the likelihood of increased spray drift. Avoid spraying during conditions of low humidity and/or high temperatures. When making applications in low relative humidity, set up equipment to produce larger droplets in order to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

## Temperature Inversions

Applications should not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small, suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light, variable winds common during inversions.

Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

## Sensitive Areas

The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g. bodies of water or non-target crops) is minimal and when wind is blowing away from the sensitive areas.

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## Additives and General Tank Mixing Information

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**Vivando® fungicide** can be tank mixed with most recommended fungicides, insecticides, liquid fertilizers, biological control products, adjuvants, and additives as specified in the **Vivando® fungicide Crop-specific Requirements** table on this label. **DO NOT** mix **Vivando** with horticultural oils except for applications to grapes made **before flowering begins**. Refer to the **Vivando® fungicide Crop-specific Requirements** table on this label for more details.

Under some conditions, the use of additives or adjuvants may improve the performance of **Vivando**. However, all varieties and cultivars have not been tested with all possible tank mix combinations. Local conditions can also influence crop tolerance and may not match those under which BASF has conducted testing. Physical incompatibility, reduced disease control, or crop injury may result from mixing **Vivando** with other products. Therefore, before using any tank mix, test the combination on a small portion of the crop to be treated to ensure that a phytotoxic response will not occur as a result of application.

Consult a BASF representative or local agricultural authorities for more information concerning additives.

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## Mixing Order

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Make sure that each component is thoroughly mixed and suspended before adding tank mix partners. Maintain constant agitation during application. Refer to the **Vivando® fungicide Crop-specific Requirements** table on this label for additional details. Refer to the **Vivando** container label for additional mixing instructions.

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## Restrictions and Limitations

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- **DO NOT** exceed the maximum product rate (fl ozs/A) per year, the maximum rate per application, or the total number of applications of **Vivando** per year as stated in the **Vivando® fungicide Crop-specific Requirements** table on this label. Preharvest interval (PHI) restrictions are also included in these tables.
- **Restricted-entry Interval - DO NOT** enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 12 hours.
- **DO NOT** mix **Vivando** with horticultural oils when making applications to grapes **after flowering begins**.
- **DO NOT** apply by chemigation.
- **Plantback Restrictions** – Crops with registered uses of metrafenone can be replanted at any time. All other crops grown for food or feed must not be planted before 365 days.
- Follow the most restrictive of the labeling limitations and precautions of all products used in mixtures.

## Vivando® fungicide Crop-specific Requirements

Crop	Target Disease	Product Use Rate per Application (fl ozs/A)	Maximum Number of Applications per Year	Maximum Product Rate per Year (fl ozs/A)	Minimum Time from Application to Harvest (PHI) (days)
Apricot	Powdery mildew <i>Podosphaera</i> spp., <i>Sphaerotheca</i> spp.	10.3 to 15.4 (0.2 to 0.3 lb ai)	2	30.8 (0.6 lb ai)	7

**Application Directions.** For control of powdery mildew, begin **Vivando** applications at pink bud or white bud or prior to disease development using 10.3 to 15.4 fl ozs/A (0.2 to 0.3 lb ai) and continue on a 7 to 14 day interval.

Use the higher rate and shorter interval when disease pressure is high.

**Vivando** must be applied before visual symptoms of powdery mildew appear. **Vivando** has no curative properties and will not control latent or established infections of powdery mildew. If powdery mildew infection is established, **Vivando** should be applied in a tank mix combination or following application of a curative fungicide.

**DO NOT** apply at rates higher than 15.4 fl ozs product (0.3 lb ai). **DO NOT** apply more than 30.8 fl ozs/A (0.6 lb ai) per year. The minimum interval between sprays is 7 days.

**DO NOT** mix **Vivando** with horticultural oils when making applications to apricots.

**Resistance Management.** To limit the potential for development of resistance, **DO NOT** make more than two (2) applications of **Vivando** per year.

**DO NOT** make more than two (2) sequential **Vivando** applications before alternating to a labeled fungicide with a different mode of action.

(continued)

**Vivando® fungicide Crop-specific Requirements** (continued)

Crop	Target Disease	Product Use Rate per Application (fl ozs/A)	Maximum Number of Applications per Year	Maximum Product Rate per Year (fl ozs/A)	Minimum Time from Application to Harvest (PHI) (days)
<p><b>Cherry subgroup 12-12A</b>                      Capulin                      Cherry, black                      Cherry, Nanking                      Cherry, sweet                      Cherry, tart                      Cultivars, varieties, and/or hybrids of these</p>	<p>Powdery mildew  <i>Podosphaera</i> spp.,  <i>Sphaerotheca</i> spp.</p>	<p>10.3 to 15.4                      (0.2 to 0.3 lb ai)</p>	<p>2</p>	<p>30.8                      (0.6 lb ai)</p>	<p>7</p>

**Application Directions.** For control of powdery mildew, begin **Vivando** applications at pink bud or white bud or prior to disease development using 10.3 to 15.4 fl ozs/A (0.2 to 0.3 lb ai) and continue on a 7 to 14 day interval.

Use the higher rate and shorter interval when disease pressure is high.

**Vivando** must be applied before visual symptoms of powdery mildew appear. **Vivando** has no curative properties and will not control latent or established infections of powdery mildew. If powdery mildew infection is established, **Vivando** should be applied in a tank mix combination or following application of a curative fungicide.

**DO NOT** apply at rates higher than 15.4 fl ozs product (0.3 lb ai). **DO NOT** apply more than 30.8 fl ozs/A (0.6 lb ai) per year. The minimum interval between sprays is 7 days.

**DO NOT** mix **Vivando** with horticultural oils when making applications to cherries.

**Resistance Management.** To limit the potential for development of resistance, **DO NOT** make more than two (2) applications of **Vivando** per year.

**DO NOT** make more than two (2) sequential **Vivando** applications before alternating to a labeled fungicide with a different mode of action.

(continued)

**Vivando® fungicide Crop-specific Requirements** *(continued)*

Crop	Target Disease	Product Use Rate per Application (fl ozs/A)	Maximum Number of Applications per Year	Maximum Product Rate per Year (fl ozs/A)	Minimum Time from Application to Harvest (PHI) (days)
<p><b>Cucurbit vegetables, group 9</b>                      Chayote                      Chinese waxgourd                      Citron melon                      Cucumber                      Gherkin                      Pumpkin                      Watermelon</p> <p><b>Edible gourd</b>                      Hechima                      Hyotan                      Cucuzza                      Chinese okra</p> <p><b>Momordica spp.</b>                      Balsam apple                      Balsam pear                      Bitter melon                      Chinese cucumber</p> <p><b>Muskmelon</b>                      Cantaloupe                      Casaba                      Crenshaw melon                      Golden pershaw melon                      Honeydew melon                      Honey balls                      Mango melon                      Persian melon                      Pineapple melon                      Santaclaus melon                      Snake melon</p> <p><b>Summer squash</b>                      Crookneck squash                      Scallop squash                      Straightneck squash                      Vegetable marrow                      Zucchini</p> <p><b>Winter squash</b>                      Butternut squash                      Calabaza                      Hubbard squash                      Acorn squash                      Spaghetti squash</p>	<p>Powdery mildew  <i>Sphaerotheca</i> spp.,  <i>Erysiphe</i> spp.</p>	<p>10.3 to 15.4                      (0.2 to 0.3 lb ai)</p>	<p>3</p>	<p>46.2                      (0.9 lb ai)</p>	<p>0</p>

*(continued)*

## Vivando® fungicide Crop-specific Requirements *(continued)*

### Cucurbit vegetables, group 9 *(continued)*

**Application Directions.** For control of powdery mildew, begin **Vivando** applications prior to disease development using 10.3 to 15.4 fl ozs/A (0.2 to 0.3 lb ai) and continue on a 7 to 14 day interval.

Use the higher rate and shorter interval when disease pressure is high.

**Vivando** must be applied before visual symptoms of powdery mildew appear. **Vivando** has no curative properties and will not control latent or established infections of powdery mildew. If powdery mildew infection is established, **Vivando** should be applied in a tank mix combination or following application of a curative fungicide.

**DO NOT** apply at rates higher than 15.4 fl ozs product (0.3 lb ai). **DO NOT** apply more than 46.2 fl ozs/A (0.9 lb ai) per year. The minimum interval between sprays is 7 days.

**DO NOT** mix **Vivando** with horticultural oils when making applications to crops in the cucurbit vegetables group.

**Resistance Management.** To limit the potential for development of resistance, **DO NOT** make more than three (3) applications of **Vivando** per year.

**DO NOT** make more than two (2) sequential **Vivando** applications before alternating to a labeled fungicide with a different mode of action.

*(continued)*

**Vivando® fungicide Crop-specific Requirements** (continued)

Crop	Target Disease	Product Use Rate per Application (fl ozs/A)	Maximum Number of Applications per Year	Maximum Product Rate per Year (fl ozs/A)	Minimum Time from Application to Harvest (PHI) (days)
<p><b>Fruit, small, vine climbing (except fuzzy kiwifruit and grapes) subgroup 13-07F</b></p> <p>Amur river grape Gooseberry Kiwifruit, hardy Maypop Schisandra berry</p> <p>Cultivars, varieties, and/or hybrids of these</p>	<p>Powdery mildew <i>Podosphaera</i> spp.</p>	<p>10.3 to 15.4 (0.2 to 0.3 lb ai)</p>	<p>3</p>	<p>46.2 (0.9 lb ai)</p>	<p>14</p>
<p><b>Application Directions.</b> For control of powdery mildew, begin <b>Vivando</b> applications at bud break prior to disease development using 10.3 to 15.4 fl ozs/A (0.2 to 0.3 lb ai) and continue on a 14 to 21 day interval.</p> <p>Use the higher rate and the shorter interval when disease pressure is high.</p> <p><b>Vivando</b> must be applied before visual symptoms of powdery mildew appear. <b>Vivando</b> has no curative properties and will not control latent or established infections of powdery mildew. If powdery mildew infection is established, <b>Vivando</b> should be applied in a tank mix combination or following application of a curative fungicide.</p> <p><b>DO NOT</b> apply at rates higher than 15.4 fl ozs product (0.3 lb ai). <b>DO NOT</b> apply more than 46.2 fl ozs/A (0.9 lb ai) per year. The minimum interval between sprays is 14 days.</p> <p><b>DO NOT</b> mix <b>Vivando</b> with horticultural oils when making applications to crops in the fruit, small, vine climbing (except fuzzy kiwifruit and grapes) subgroup.</p> <p><b>Resistance Management.</b> To limit the potential for development of resistance, <b>DO NOT</b> make more than three (3) applications of <b>Vivando</b> per year.</p> <p><b>DO NOT</b> make more than two (2) sequential <b>Vivando</b> applications before alternating to a labeled fungicide with a different mode of action.</p>					

(continued)

## Vivando® fungicide Crop-specific Requirements *(continued)*

Crop	Target Disease	Product Use Rate per Application (fl ozs/A)	Maximum Number of Applications per Year	Maximum Product Rate per Year (fl ozs/A)	Minimum Time from Application to Harvest (PHI) (days)
Grapes	Powdery mildew <i>Podosphaera</i> spp.	10.3 to 15.4 (0.2 to 0.3 lb ai)	3	46.2 (0.9 lb ai)	14

**Application Directions.** For control of powdery mildew, begin **Vivando** applications at bud break prior to disease development using 10.3 to 15.4 fl ozs/A (0.2 to 0.3 lb ai) and continue on a 14 to 21 day interval.

Use the higher rate and the shorter interval when disease pressure is high.

**Vivando** must be applied before visual symptoms of powdery mildew appear. **Vivando** has no curative properties and will not control latent or established infections of powdery mildew. If powdery mildew infection is established, **Vivando** should be applied in a tank mix combination or following application of a curative fungicide.

**DO NOT** apply at rates higher than 15.4 fl ozs product (0.3 lb ai). **DO NOT** apply more than 46.2 fl ozs/A (0.9 lb ai) per year. The minimum interval between sprays is 14 days.

**DO NOT** mix **Vivando** with horticultural oils when making applications to grapes **after flowering begins**.

**Resistance Management.** To limit the potential for development of resistance, **DO NOT** make more than three (3) applications of **Vivando** per year.

**DO NOT** make more than two (2) sequential **Vivando** applications before alternating to a labeled fungicide with a different mode of action.

*(continued)*

## Vivando® fungicide Crop-specific Requirements *(continued)*

Crop	Target Disease	Product Use Rate per Application (fl ozs/A)	Maximum Number of Applications per Year	Maximum Product Rate per Year (fl ozs/A)	Minimum Time from Application to Harvest (PHI) (days)
Hops	Powdery mildew <i>Podosphaera</i> spp., <i>Sphaerotheca</i> spp.	10.3 to 15.4 (0.2 to 0.3 lb ai)	2	30.8 (0.6 lb ai)	3

**Application Directions.** For control of powdery mildew, begin **Vivando** applications prior to disease development using 10.3 to 15.4 fl ozs/A (0.2 to 0.3 lb ai) and continue on a 7 to 14 day interval.

Use the higher rate and shorter interval when disease pressure is high.

**DO NOT** apply by air.

**Vivando** must be applied before visual symptoms of powdery mildew appear. **Vivando** has no curative properties and will not control latent or established infections of powdery mildew. If powdery mildew infection is established, **Vivando** should be applied in a tank mix combination or following application of a curative fungicide.

**DO NOT** apply at rates higher than 15.4 fl ozs product (0.3 lb ai). **DO NOT** apply more than 30.8 fl ozs/A (0.6 lb ai) per year. The minimum interval between sprays is 7 days.

**DO NOT** mix **Vivando** with horticultural oils when making applications to hops.

**Resistance Management.** To limit the potential for development of resistance, **DO NOT** make more than two (2) applications of **Vivando** per year.

**DO NOT** make more than two (2) sequential **Vivando** applications before alternating to a labeled fungicide with a different mode of action.

*(continued)*

**Vivando® fungicide Crop-specific Requirements** (continued)

Crop	Target Disease	Product Use Rate per Application (fl ozs/A)	Maximum Number of Applications per Year	Maximum Product Rate per Year (fl ozs/A)	Minimum Time from Application to Harvest (PHI) (days)
<b>Peach subgroup 12-12B</b> Nectarine Peach Cultivars, varieties, and/or hybrids of these	Powdery mildew <i>Podosphaera</i> spp., <i>Sphaerotheca</i> spp.	10.3 to 15.4 (0.2 to 0.3 lb ai)	2	30.8 (0.6 lb ai)	7

**Application Directions.** For control of powdery mildew, begin **Vivando** applications at pink bud or white bud or prior to disease development using 10.3 to 15.4 fl ozs/A (0.2 to 0.3 lb ai) and continue on a 7 to 14 day interval.

Use the higher rate and shorter interval when disease pressure is high.

**Vivando** must be applied before visual symptoms of powdery mildew appear. **Vivando** has no curative properties and will not control latent or established infections of powdery mildew. If powdery mildew infection is established, **Vivando** should be applied in a tank mix combination or following application of a curative fungicide.

**DO NOT** apply at rates higher than 15.4 fl ozs product (0.3 lb ai). **DO NOT** apply more than 30.8 fl ozs/A (0.6 lb ai) per year. The minimum interval between sprays is 7 days.

**DO NOT** mix **Vivando** with horticultural oils when making applications to crops in the peach subgroup.

**Resistance Management.** To limit the potential for development of resistance, **DO NOT** make more than two (2) applications of **Vivando** per year.

**DO NOT** make more than two (2) sequential **Vivando** applications before alternating to a labeled fungicide with a different mode of action.

(continued)

## Conditions of Sale and Warranty

The **Directions For Use** of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and must be followed carefully. However, it is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or use of the product in a manner inconsistent with its labeling, all of which are beyond the control of BASF CORPORATION ("BASF") or the Seller. To the extent consistent with applicable law, all such risks shall be assumed by the Buyer.

BASF warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the **Directions For Use**, subject to the inherent risks, referred to above.

**TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BASF MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS OR MERCHANTABILITY OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.**

**TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BUYER'S EXCLUSIVE REMEDY AND BASF'S EXCLUSIVE LIABILITY, WHETHER IN CONTRACT, TORT, NEGLIGENCE, STRICT LIABILITY, OR OTHERWISE, SHALL BE LIMITED TO REPAYMENT OF THE PURCHASE PRICE OF THE PRODUCT.**

**TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BASF AND THE SELLER DISCLAIM ANY LIABILITY FOR CONSEQUENTIAL, EXEMPLARY, SPECIAL OR INDIRECT DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT.**

BASF and the Seller offer this product, and the Buyer and User accept it, subject to the foregoing **Conditions of Sale and Warranty** which may be varied only by agreement in writing signed by a duly authorized representative of BASF.

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007969-00284.20160217c.NVA 2016-04-331-0044

BASF Corporation  
26 Davis Drive  
Research Triangle Park, NC 27709



We create chemistry

## Supplemental Label

# Vivando®

## Fungicide

**ACCEPTED**  
03/04/2016  
Under the Federal Insecticide, Fungicide  
and Rodenticide Act as amended, for the  
pesticide registered under  
EPA Reg. No. 7969-284

### For use on pome fruit to control powdery mildew

This supplemental label expires December 31, 2017 and must not be used or distributed after this date.

#### Active Ingredient\*:

metrafenone: (3-bromo-6-methoxy-2-methylphenyl)(2,3,4-trimethoxy-6-methylphenyl)methanone ..... 25.20%

**Other Ingredients:**..... 74.80%

**Total:** ..... 100.00%

\*This product contains 2.5 lbs active ingredient per gallon

**EPA Reg. No. 7969-284**

### Directions For Use

- It is a violation of federal law to use this product in a manner inconsistent with its labeling.
- The supplemental labeling and the entire **Vivando® fungicide** container label, EPA Reg. No. 7969-284, must be in possession of the user at the time of application.
- Read the label affixed to the container for **Vivando** before applying.
- Use of **Vivando** according to this labeling is subject to the use precautions and limitations imposed by the label affixed to the container for **Vivando**.

### Product Information

#### Mode of Action

Metrafenone, the active ingredient in **Vivando**, affects several stages in the infection process of the powdery mildew pathogen. It has a different mode of action than that of other fungicides registered for use against pome fruit powdery mildew.

#### Resistance Management

**Vivando** contains metrafenone, a fungicide with a mode of action different from that of other fungicides

currently registered for use against pome fruit powdery mildew. Refer to the **Vivando** container label for additional fungicide resistance recommendations.

### Application Instructions

Refer to the **Vivando® fungicide Crop-specific Requirements** table on this label for specific application rates and application intervals for pome fruit. **Vivando** can be applied with ground sprayer, hand-held sprayer or aerial equipment. **DO NOT** apply **Vivando** by chemigation. Refer to the **Vivando** container label for additional instructions and restrictions.

#### Aerial Application

Aerial application can be made to pome fruit where applications are not possible using ground equipment. Thorough coverage is required to obtain optimum disease control. Avoid applications under conditions when uniform coverage cannot be obtained or when spray drift may occur. For aerial applications to pome fruit, **DO NOT** use less than 10 gallons of spray solution per acre. Thorough coverage is required for optimum disease control. The reduced spray volumes used in aerial applications may result in physical incompatibility, reduced disease control, or crop injury

from **Vivando® fungicide** applications, particularly when tank mixed with other products. Therefore, before making aerial applications test the spray on a small portion of the crop to be treated to ensure that a phytotoxic response will not occur as a result of application.

## Spray Drift Management

**DO NOT** spray when conditions favor drift beyond area intended for application. Conditions that may contribute to drift include thermal inversion, wind speed and direction, spray nozzle/pressure combinations, spray droplet size, temperature/humidity, etc. Contact your state extension agent for spray drift prevention guidelines in your area. All aerial and ground application equipment must be properly maintained and calibrated using appropriate carriers. Avoiding spray drift at the application site is the responsibility of the applicator.

## Aerial Application Methods and Equipment

The interaction of many equipment-related and weather-related factors determines the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

**DO NOT** apply under circumstances where possible drift to unprotected persons, to food, forage, or other plantings that might be damaged, or crops thereof rendered unfit for sale, use or consumption can occur.

**DO NOT** release spray at a height greater than 10 feet above the crop canopy unless a greater height is required for aircraft safety or special weather conditions.

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications to agricultural field crops.

1. The distance of the outermost nozzles on the boom must not exceed 3/4 the length of the fixed wingspan or 90% of rotor blade diameter.
2. Nozzles must always point backward parallel with the airstream and never be pointed downward more than 45 degrees.

Where states have more stringent regulations, they must be observed.

## Information on Droplet Size

The most effective way to reduce drift potential is to apply large droplets. Use the largest droplet size consistent with acceptable efficacy. Applying larger droplets reduces drift potential but will not prevent drift if applications are made improperly or under unfavorable environmental conditions (see Wind; Temperature and Humidity; and Temperature Inversions).

## Controlling droplet size:

- **Volume** - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure** - **DO NOT** exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **Number of Nozzles** - Use the minimum number of nozzles that provide uniform coverage.
- **Nozzle Orientation** - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is recommended practice unless inconsistent with product efficacy. Significant deflection from the horizontal will reduce droplet size and increase drift potential.
- **Nozzle Type** - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid-stream nozzles oriented straight back produce the largest droplets and the lowest drift.

## Wind

**DO NOT** apply at wind speeds greater than 15 mph. Drift potential is lowest when wind speed does not exceed 10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided when wind speed is below 2 mph due to variable wind direction and high inversion potential. Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

## Temperature and Humidity

Low humidity and high temperatures increase the evaporation of spray droplets and, therefore, the likelihood of increased spray drift. Avoid spraying during conditions of low humidity and/or high temperatures. When making applications in low relative humidity, set up equipment to produce larger droplets in order to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

## Temperature Inversions

Applications should not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small, suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light, variable winds common during inversions.

Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

### **Sensitive Areas**

The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g. bodies of water or non-target crops) is minimal and when wind is blowing away from the sensitive areas.

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### **Additives and General Tank Mixing Information**

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**Vivando® fungicide** can be tank mixed with most recommended fungicides, insecticides, liquid fertilizers, biological control products, adjuvants, and additives as specified in the **Vivando® fungicide Crop-specific Requirements** table on this label for pome fruit.

Under some conditions, the use of additives or adjuvants may improve the performance of **Vivando**. However, all varieties and cultivars have not been tested with all possible tank mix combinations. Local conditions can also influence crop tolerance and may not match those under which BASF has conducted testing. Physical incompatibility, reduced disease control, or crop injury may result from mixing **Vivando** with other products. Therefore, before using any tank mix, test the combination on a small portion of the crop to be treated to ensure that a phytotoxic response will not occur as a result of application.

Consult a BASF representative or local agricultural authorities for more information concerning additives.

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### **Mixing Order**

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Make sure that each component is thoroughly mixed and suspended before adding tank mix partners. Maintain constant agitation during application. Refer to the **Vivando® fungicide Crop-specific Requirements** table for additional details on pome fruit. Refer to the **Vivando** container label for additional mixing instructions.

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### **Restrictions and Limitations**

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- **DO NOT** exceed the maximum product rate (fl ozs/A) per year, the maximum rate per application, or the total number of applications of **Vivando** per year as stated in the **Vivando® fungicide Crop-specific Requirements** table on this label. Preharvest interval (PHI) restrictions are also included in these tables.
- **Restricted-entry Interval - DO NOT** enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 12 hours.
- **DO NOT** apply by chemigation.
- **Plantback Restrictions** – Crops with registered uses of metrafenone can be replanted at any time. All other crops grown for food or feed must not be planted before 365 days.
- Follow the most restrictive of the labeling limitations and precautions of all products used in mixtures.

**Vivando® fungicide Crop-specific Requirements**

Crop	Target Disease	Product Use Rate per Application (fl ozs/A)	Maximum Number of Applications per Year	Maximum Product Rate per Year (fl ozs/A)	Minimum Time from Application to Harvest (PHI) (days)
<p><b>Pome fruit group</b>                      Apple                      Asian pear                      Azarole                      Crabapple                      Loquat                      Mayhaw                      Medlar                      Pear                      Quince                      Quince, Chinese                      Quince, Japanese                      Tejocote</p>	<p>Powdery mildew  <i>Podosphaera</i>                      spp.</p>	<p>10.3 to 15.4                      (0.20 to 0.30                      lb ai)</p>	<p>3</p>	<p>46.2                      (0.9 lb ai)</p>	<p>7</p>

**Application Directions.** For control of powdery mildew, begin **Vivando** applications at bud break targeting rapidly expanding tissues, using 10.3 to 15.4 fl ozs/A and continue on a 7 to 14 day interval.

Use the higher rate and shorter interval when disease pressure is high.

**DO NOT** apply at rates higher than 15.4 fl ozs product. **DO NOT** apply more than 46.2 fl ozs (0.9 lb ai) per acre per year. The minimum interval between sprays is 7 days.

**DO NOT** mix **Vivando** with horticultural oils when making applications to crops in the pome fruit group.

**Resistance Management.** To limit the potential for development of resistance, **DO NOT** make more than three (3) applications of **Vivando** per year.

**DO NOT** make more than two (2) sequential **Vivando** applications before alternating to a labeled fungicide with a different mode of action.

## Conditions of Sale and Warranty

The **Directions For Use** of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and must be followed carefully. However, it is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or use of the product in a manner inconsistent with its labeling, all of which are beyond the control of BASF CORPORATION ("BASF") or the Seller. To the extent consistent with applicable law, all such risks shall be assumed by the Buyer.

BASF warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the **Directions For Use**, subject to the inherent risks, referred to above.

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007969-00284.20160217c.NVA 2016-04-331-0043

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